| Mr. Michael T. Davis<br>Pre-Calculus | 1.3 Simplifying Expressions with Bases & Exponents - In-Class (1)<br>September 6, 2016 |
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Name:

Simplify each expression (do not leave any negative exponents):

1. $\sqrt{9} = 3$

2. $\sqrt{16} = 4$

3. $\sqrt[3]{27} = 3$

4. $\sqrt[3]{64} = 2$

5. $\sqrt[4]{16} = 2$

6. $\sqrt[4]{81} = 3$

7. $9^{\frac{3}{2}} = \left(9^{\frac{1}{2}}\right)^3 = 3^3 = 27$

8. $8^{\frac{2}{3}} = \left(8^{\frac{1}{3}}\right)^2 = 2^2 = 4$

9. $27^{\frac{4}{3}} = \left(27^{\frac{1}{3}}\right)^4 = 3^4 = 81$

10. $4^{\frac{5}{2}} = \left(4^{\frac{1}{2}}\right)^5 = 2^5 = 32$

11. $81^{\frac{3}{4}} = \left(81^{\frac{1}{4}}\right)^3 = 3^3 = 27$

12. $10000^{\frac{3}{4}} = \left(10000^{\frac{1}{4}}\right)^3 = 10^3 = 1000$

13. $\frac{6^9}{6^6} = 6^3 = 216$

14. $\frac{5^{14}}{5^{11}} = 5^3 = 125$

15. $\frac{7^5}{7^7} = \frac{1}{7^2} = \frac{1}{49}$

16. $\frac{x^{14}}{x^6} = x^8$

17. $\frac{y^{11}}{y^{15}} = \frac{1}{y^4}$

18. $\frac{x^{10}y}{x^6y^3} = \frac{x^4}{y^2}$

19. $\frac{35x^8}{7x^3} = 5x^5$

20. $\frac{5x^7y}{40x^6y^3} = \frac{x}{8y^2}$

21. $\frac{42x^2y^5}{14x^5y^9} = \frac{3}{x^3y^4}$

22. $x \cdot x^{\frac{1}{3}} = x^{1\frac{1}{3}} = x^{\frac{4}{3}}$

23. $\frac{x}{x^{-1}} = x \cdot x = x^2$

24. $\frac{x^{-3}}{x^{-1}} = \frac{1}{x^{-1}x^3} = \frac{1}{x^2}$

25. $\left(2x^2y\right)^3 = 8x^6y^3$

26. $5x^3 + 9x^3 = 14x^3$

27. $2x^2y^4 + 8x^2y^4 = 10x^2y^4$

28. $\left(2x^2y^3\right)^4 + \left(3x^4y^6\right)^2 =$

$16x^8y^{12} + 9x^8y^{12}$

$25x^8y^{12}$

29. $\frac{(x+y)^3}{(x+y)} = (x+y)^2$

$= x^2 + 2xy + y^2$

30. $\left(6x^{\frac{1}{2}}\right)\left(3x^{\frac{1}{3}}\right) = 18x^{\frac{5}{6}}$

31. $\left(\frac{4n^5}{m}\right)^3 = \frac{64n^{15}}{m^3}$

32. $\left(\frac{3m^2n^7}{m}\right)^0 = 1$

33. $\frac{e^{6x}}{e^x} = e^{5x}$